

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 4 of 9

woven yarns or threads laid side-by-side. The yarns in at least some of the different layers extend in different directions. The layers of reinforcing material are stitched together by knitting so as to hold the yarns in fixed positions relative to one another. (Vane, col. 2, lines 64-69).

U.S. Patent No. 5,910,458 (Beer et al.) discloses a mat adapted to reinforce a thermosetting matrix material. The mat includes a primary layer of generally parallel, essentially continuous glass fiber strands oriented generally parallel to a longitudinal axis of the mat. A secondary layer includes a plurality of randomly oriented chopped and/or continuous glass fibers. The strands of the primary layer are entangled with the strands of the secondary layer by needling to form the mat.

It is unclear whether the rejection is directed to substituting the batting layer of Beer for the stitching of Vane, or adding the batting layer of Beer in addition to the stitching layer of Vane. Clarification is requested.

Assuming that the rejection is to substitute the batting layer of Beer for the stitching of Vane, Applicants submit that there is no basis for the assertion that the resulting mat would be stronger than the mat of Vane or the mat of Beer. Absent some discernible benefit, there is no motivation for such a modification. Moreover, a rejection based on substituting the batting layer of Beer for the stitching of Vane requires a motivation to remove the stitching, which is the heart of Vane's invention, and substitute the needled batting material of Beer. No such motivation has been identified.

Alternatively, assuming that the rejection is to add the batting layer of Beer in addition to the stitching of Vane, Applicants submit that there is no motivation for such a redundant structure. As discussed in the prior response, Vane and Beer each teach different methods of securing the reinforcing fibers in a fixed relationship relative to one another. Beer does not teach stitching the reinforcing fibers because the reinforcing fibers are secured by a needled batting material. Vane does not teach a needled batting material because the reinforcing fibers are secured by stitching. There is absolutely no need for two structures performing the same function. Neither reference contains any teaching or

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 5 of 9

motivation to employ two means for securing the reinforcing fibers in a fixed relationship relative to one another.

Applicants reassert that there is no motivation to modify or combine the cited references as proposed.

The following quote appears at page 2 of the Office Action:

Applicants arguments are not found persuasive because the Beer reference teaches that the composite of their invention exhibits good structural integrity which facilitates handling the mat and enables the fabricator to decrease mold cycle times. (Column 5, lines 43-45) Further, the reference teaches that thermoset composites fabricated from the mats of their invention exhibit good flexibility and high density to provide good load bearing capabilities, as well as high shear strength, compressive strength and interlaminar shear. (Column 5, lines 51-55)

Therefore, the inclusion of a batting material as taught by Beer et al. provides further strength to the mat of Vane. The teachings of the Beer reference not only provide a method of securing the reinforcing fibers, it also give strength to [the] mat.

Applicants respectfully submit that this quote supports the contention that there is no motivation to modify or combine the cited references. In particular, the glass fiber mat of Beer has sufficient strength and processing properties for its intended purpose. Vane presumably also teaches a mat with sufficient strength and processing properties for its intended purpose. Since both Vane and Beer successfully provide sufficient strength for their intended applications, increasing the strength of the mats of Beer or Vane cannot supply the required motivation for the proposed rejection.

Finally, Vane accomplishes securing the reinforcing fibers with stitching, teaching away from the batting layer of Beer. Teaching away from the claimed invention is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Essentially, teaching away from the art is a *per se* demonstration of lack of *prima facie* obviousness. In re Dow Chemical Co., 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Nielson, 816 F.2d 1567, 2 USPQ2d 1525 (Fed. Cir. 1987). Applicants submit that the stitching solution

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 6 of 9

disclosed in Vane teaches away from the needled batting layer disclosed in Beer. Similarly, the needled batting layer of Beer teaches away from the stitching solution disclosed in Vane.

Since no other motivation for the proposed combination has been provided, Applicants submit that the rejection fails. Applicant respectfully submits that claims 13-28 and 65-102 distinguish over the cited references. Applicant respectfully requests a Notice of Allowance to be issued in this case.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version With Markings To Show Changes Made.**" Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

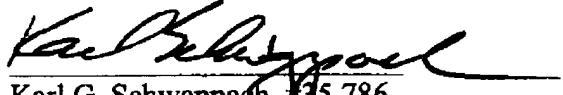
No fee is believed to be necessary. Should any fee be required, the Commissioner is authorized to charge our Deposit Account No. 06-0029 and notify us of the same.

If the Examiner deems any issue remaining after consideration of this response, he is invited to call the undersigned and expedite any remaining prosecution.

Respectfully Submitted,

KENNETH D. BEER et al.

By:


Karl G. Schwappach, #35,786
FAEGRE & BENSON LLP
2200 Wells Fargo Center
90 South Seventh Street
Minneapolis, MN 55402-3901
612/766-7773

Dated: April 7, 2003
M2:20534566.01

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 7 of 9

VERSION WITH MARKINGS TO SHOW CHANGES MADE

13. (Once Amended) A mat for use as reinforcement for a resin composition to be used in forming an elongated, pultruded part of constant transverse cross-section using a pultrusion die, said mat comprising:

 a first layer of continuous, generally longitudinally-extending fibers which provide longitudinal strength to the mat;

 a second layer of generally transverse reinforcement fibers in association with the first layer of generally longitudinal fibers and oriented in a direction at an angle with respect to the longitudinal pull direction of the mat to provide transverse strength to the mat;

 a third layer of diagonal transport fibers for the transverse reinforcement fibers, at least certain of the transport fibers extending diagonally of the first layer of generally longitudinally-extending fibers and oriented to provide shear strength stiffness and anti-skewing resistance to the mat; and

 a batting layer containing comprising polymeric fibers, at least a portion of which extend through the thickness of the mat layers and interconnect the fibers of all of the layers to increase the shape-retaining capability of the mat during pultrusion of the part.

27 (Once Amended). A mat for use as reinforcement for a resin composition to be used in forming an elongated, pultruded part of constant transverse cross-section using a pultrusion dies, said mat comprising:

 a first layer of continuous, generally longitudinally-extending fibers which provide longitudinal strength to the mat;

 a second layer of generally transverse reinforcement fibers in association with the first layer of generally longitudinal fibers and oriented in a direction at an angle with respect to the longitudinal pull direction of the mat to provide transverse strength to the mat; and

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 8 of 9

a batting layer containing comprising polymeric fibers, at least a portion of which extend through the thickness of the mat layers and interconnect the fibers of all of the layers to increase the shape-retaining capability of the mat during pultrusion of the part, the batting layer being bonded to the other layers of the mat.

65. (Once Amended) A reinforcement mat adapted for use in manufacture of a pultruded part where the mat is pulled through a pultrusion die in a continuous longitudinal pull direction, said mat comprising:

a body having a pair of opposed outer surfaces which define the thickness of the mat,

said body including elongated reinforcing fibers oriented in a direction transverse to said pull direction; and

batting material in contact with said reinforcing fibers and including polymeric staple fibers, a certain proportion of said staple fibers extending through at least a portion of said mat thickness and randomly entangled with and interconnecting said reinforcing fibers.

85. (Once Amended) A reinforcement mat adapted for use and manufacture of a pultruded part where the mat is pulled along with longitudinal fibers through a pultrusion die in a continuous longitudinal pull direction, said mat comprising:

a body presenting a pair of opposed outer surfaces defining the thickness of the mat,

said body including elongated reinforcing fibers oriented in a direction transverse to said pull direction and arranged to provide transverse strength to a pultruded part containing the mat; and

said body including fiber means including polymeric entangling staple fibers extending through at least a portion of said mat thickness and randomly entangled with said reinforcing fibers, said fiber means being operable to carry the transverse fibers through the

Amendment and Response Under Rule 1.116
Serial No. 09/597,456
Page 9 of 9

pultrusion die and to provide longitudinal strength, shear strength and anti-skewing resistance to the mat during pultrusion of a part reinforced with the mat.